

AIR POLLUTION, MALODOR, AND HEALTH IN A COMMUNITY BORDERING A LANDFILL

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Background and Aims: Municipal solid waste landfills are sources of air pollution that may affect the health and quality of life of neighboring communities. We aim to investigate health and quality of life concerns of neighbors related to landfill air pollution.

Methods: Landfill neighbors were enrolled and kept twice-daily diaries for 14 days about odor intensity, alteration of daily activities, mood states, and irritant and other physical symptoms between Jan–Nov, 2009. Concurrently, hydrogen sulfide (H_2S) air measurements were recorded every 15-min. Relationships between H_2S , odor, and health outcomes were evaluated using conditional fixed effects regression models.

Results: Twenty-three participants enrolled and completed 878 twice-daily diary entries. H_2S measurements were recorded over a period of 80 d and 1-hr average H_2S = 0.22 ppb (SD = 0.27; range = 0–2.30 ppb). Landfill odor increased 0.67 points (on 5-point Likert-type scale) for every 1 ppb increase in hourly average H_2S when the wind was blowing from the landfill towards the community (standard error (SE) = 0.19; t-value = 3.49). Odor was strongly associated with reports of alteration of daily activities (odds ratio (OR) = 9.0; 95% confidence interval (CI) = 3.5, 23.5), negative mood states (OR = 5.2; 95% CI = 2.8, 9.6), mucosal irritation (OR = 3.7; 95% CI = 2.0, 7.1) and upper respiratory symptoms (OR = 3.9; 95% CI = 2.2, 7.0), but not positive mood states (OR = 0.6; 95% CI = 0.2, 1.5) and gastrointestinal (GI) symptoms (OR = 1.0; 95% CI = 0.4, 2.6)).

Conclusions: Results suggest air pollutants from a regional landfill negatively impact the health and quality of life of neighbors.